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ABSTRACT

One of a series of 18, this Child Development Associate (CDA) training module provides a guide to the construction of learning centers in preschool settings. Upon completion of the module the CDA trainee is expected to be able to analyze and improve the arrangement of space, materials and equipment; specify and rotate learning centers in the available space; inventory materials and equipment; plan, execute and evaluate learning experiences in each different learning center; evaluate learning center effectiveness; and understand the importance of learning centers for child development. After a statement of rationale, objectives and self-evaluation procedures, the module gives an overview of learning centers and then focuses on specific kinds: art, block, dramatic play, language arts, mathematics, music and science centers. The overview discusses the physical arrangement of learning centers, their value, scheduling and selection, and the teacher's role. Each kind of center is discussed in terms of physical arrangement and selection of materials and equipment. Sample listings of materials and equipment for each center are provided. Also included are lists of supplemental reference books, pamphlets, children's books, films, filmstrips and cassette tapes about early childhood education. (RH)

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The Child Development Associate Pilot Project, funded by the U. S. Department of Health, Education and Welfare, Region VI, Office of Child Development, was awarded to Eastern Oklahoma State College in the fall of 1973, where during the next two years, draft materials for competency-based training was developed. In the fall of 1975, Oscar Rose Junior College was contracted to review and revise the materials for publication. The following individuals have provided the expertise and assistance for completion of the Oklahoma Child Development Associate curriculum materials.

OKLAHOMA CHILD DEVELOPMENT ASSOCIATE POLICY ADVISORY COUNCIL 1973-76

Mayme Jackson, Chairperson 1973-76
Sally Augustine 1973-76
Marcie Banks 1975-76
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Gary Witt 1974-75
Eugenia M. Zallen 1974-76

OSCAR ROSE JUNIOR COLLEGE 1975-76

Susan C. Loveless, Project Director
Sue Williams, Child Development Specialist
Jane Thomas, Child Development Specialist
Dolores Stegelin, Child Development Specialist

EASTERN OKLAHOMA STATE COLLEGE 1973-75

Dale Chlouber, Project Director
Dixie McKinzie, staff 1973-75
Mary M. Dunkin, staff 1973-74
Barbara Ross, staff 1974-75
Pamela Hill, staff 1974-75
Lynn DuChateau, staff 1974-75

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CHAPTER I

INTRODUCTION

RATIONALE

The environment of young children needs to be orderly to enhance development and provide for the individual needs of the children. The manner in which the total environment is organized will have a great impact on the quantity and quality of the experiences which occur within that environment.

One method for organizing the environment is through learning centers. Here, materials and equipment are grouped according to a curriculum area and can be used for both group and individual learning experiences.

The number of centers available for use at any given time will be somewhat dependent on the physical space and material resources available. However, the teacher's knowledge and imagination can provide a more interesting and stimulating environment for learning by the children.

Teachers should develop the ability to organize space for optimum use by the children and thus, for increasing their potential for total growth and development.

Accomplishment of the objectives in this area will foster the individual's development of the following competencies as defined by the Child Development Associate Consortium:

Competencies:

I. Establishes and maintains a safe and healthy learning environment.

VI. Carries out supplemental responsibilities.

OBJECTIVES

Upon completion of this area the trainee will be able to:

1. Analyze the current room arrangement and suggest changes to increase utilization of available space, materials, and equipment.

2. Determine the number of learning centers to be available at any given time and the time rotation for these centers to be set up.

3. Inventory materials and equipment available in each center and determine deficiencies and how these deficiencies could be eliminated.

4. Plan, execute and evaluate learning experiences in each learning center.

5. Evaluate the effectiveness of the arrangement, materials and equipment in each learning center and make changes where low evaluations occur.

6. Recognize the importance of learning centers to enhance development by organizing space into specific learning centers.

CHAPTER II

SELF-EVALUATION

To determine your competence in this area, read through the rationale and objectives in Chapter I and check those which you can perform successfully. This will provide an indication of your strengths and weaknesses.

Discuss this evaluation with the trainer/supervisor to determine the classroom and field experiences that will enable you to demonstrate competence in each objective.

If your self-evaluation and interview indicate that you can demonstrate competence in each objective, request an advanced-standing examination from your trainer.

CHAPTER III

OVERVIEW OF LEARNING CENTERS

RATIONALE

The manner in which the total environment is arranged within the early childhood center has a great impact on the quality of activity which occurs within that environment. One of the primary aspects of environmental structuring is the planning and organization of learning centers.

There are various possible centers which can be set up; the type implemented will be dependent to some extent on factors such as the physical space and material resources available. However, the primary factor in setting up learning centers will be the knowledge base and educational philosophy of the teacher responsible for planning and organizing the environment and implementing the program.

ESSENTIAL CONTENT INFORMATION

I. Types of Centers Usually Included in the Program:

A. Art Center---A place for painting, collage-making, cutting, pasting, chalking.

B. Block-Building Center---A place to create with large and small blocks (to build a farm, fort, boat, etc.) and for sociodramatic and imaginative play.

C. Dramatic Play Center---A place for sociodramatic and imaginative play.

D. Language Arts Center---A quiet place to be alone, to explore the world through looking at books, or to listen to stori recorded on cassette tapes through earphones.

E. Mathematics Center---Items to be included here would be such things as scales for balancing, containers for measurement, cuisinaire rods, counting beads, felt and sandpaper numerals, an abacuses and other materials for seriation and classification.

F. Music Center---A place for listening to records or cassettes; for singing, creative dance and movement; or for playing instruments.

G. Science Center---A place to learn about nature; to display what the children find at home or on a nature walk; or to use for exploration and problem solving.

H. Manipulative Play Activities Center---Items included here are toys and games which lend themselves to sitting at low tables in child-sized chairs: puzzles, lotto, leggo, small cube blocks, etc.

I. Woodworking Center---A place for activities such as sawing, hammering, gluing wood into models, sanding, and painting.

II. Physical Arrangement of Learning Centers:

A. Learning centers should be spatially separated according to noise and activity level. Noisy and active areas should be located away from ones requiring a quiet place.

B. Locate centers which encourage creativity or sustained activity; for example, the block center or language arts center should be placed out of the direct line of traffic so the child can work uninterrupted.

C. Provide one learning center each day which allows privacy for the individual child. This could be done through the location of the book area or music listening area.

D. Place interesting centers at various locations throughout the room to cut down on the number of children congregating in one place. This allows children in each learning center to become involved in their chosen activity with less noise and activity level. It also minimizes confusion and friction.

E. Locate learning centers according to the placement and amount of available storage space as well as other facilities needed for specific learning centers. For example, the blocks require a large amount of open storage space; the creative arts area needs to be located near natural lighting, a sink, and storage for art materials.

F. The storage space for each learning center should have open storage space available for the materials and equipment the children will use in the center.

III. Value of Learning Centers:

A. Physical skills.

B. Cognitive growth.

1. Language.

2. Creativity.

3. Problem solving.

C. Social skills.

D. Emotional development.

IV. Scheduling and Selection of Learning Centers:

A. Learning centers should be selected which are appropriate to the levels of development of the children in your class.

B. Centers should be selected which are appropriate for the interests of your students.

C. Various centers should be available from day to day. However, certain ones such as the block and dramatic play centers should always be available.

D. Have an appropriate amount of equipment in each center. When there is too little equipment, the child may lose interest by having to wait too long for a turn, or there may not be an adequate amount of materials to stimulate or sustain the interest of individual children. Conversely, too much equipment may be overstimulating and prevent the child from being able to sustain an activity and follow it through to completion.

E. Vary equipment within a center of interest to correspond to a particular content area being emphasized at that particular time. For example, when studying about community helpers, various prop boxes could be gradually introduced in the housekeeping area for various community helpers---fireman, policeman, doctor, etc. (Refer to unit on sociodramatic play---prop boxes).

F. Have a good variety in the types of learning centers available for selection each day. This helps to keep interest levels high.

G. For facilitating their growth, the variety in learning centers available each day should provide for the various levels of the children's development. Available centers could be varied daily or weekly.

H. The learning centers should be set up before the children arrive at school to facilitate a high level of involvement and a smoothly-functioning program.

I. The daily schedule should be arranged to allow children sufficient time within a learning center to become involved in a project and to carry the process through to completion.

V. <u>The Teacher's Role in the Learning Center</u>:

A. Plan and organize the centers (Refer to Sections A,B,C,D,).

B. Help a child who is having trouble being included to enter into a groups activity. For example, when children are having trouble entering a sociodramatic play situation revolving around home life, you might help them enter into the situation by introducing them as someone who has come to visit.

C. To encourage thinking and problem-solving skills, raise questions about aspects of the children's play as it progresses. There questions should be open-ended and lead to further questions and discussions as much as possible.

D. Assist children in resolving situations that they cannot handle, such as when two children get into a fight over one toy, or a child becomes overly-excited and needs to be removed from the situation for a while to calm down.

E. Assist children in transitions from activities in one center to another. One way is to inform children ahead of time that it is almost time to change so they can bring closure to their current project.

F. Assist children in the appropriate use of materials when this is needed. Children need to have the freedom to explore with materials in their own way, but sometimes they need some direction. For example, a child who has not used a magnet before and is using it to bang on the table can be shown how the magnet can be used to pick up certain metal objects.

G. Lead children into future activities to stimulate further activities and growth. For example, if a child seems quite interested in playing with a magnet for picking up objects on the science table, the child could also be shown that while the magnet will pick up some objects within the classroom, it has no effect on others. The child could be encouraged to explore this on his own.

H. Observe children to note developmental abilities and plan for both individual and group activities based on these informal assessments.

CHAPTER IV

THE ART CENTER

RATIONALE

The well-planned art center provides opportunities for meeting many goals of children's development. As children paint, cut, draw, paste, and mold clay, they are developing eye-hand coordination and fine motor skills which are prerequisites for reading and writing. Art activities are social in nature, but they also foster language development. Intellectual concepts are learned during every project, and the child gains emotional release through manipulation of various media. Art activities provide children avenues for creativity, self-direction and independence if supervising adults will grant them this freedom.

ESSENTIAL CONTENT INFORMATION

I. Physical Arrangement of the Art Center:

A. Locate away from areas of traffic.

B. Locate near a water source; a sink in the art area is beneficial.

C. Locate near other quiet activities.

D. Provide a means for displaying the children's work; wall drying racks, clothesline on pulley, etc.

E. Place near a window for natural light.

F. Provide adequate space to permit individual freedom of movement and selection of work space.

G. Provide available and reachable space for children's self-selected art activities.

II. Selection of Materials and Equipment:

A. Equipment should be scaled to the chilren's size.

B. Provide a rich variety of media to meet individual developmental needs of children.

C. Select materials and equipment appropriate for the children's developmental levels.

D. The amount of materials made available at one time should be proportionate to the amount of space available.

E. Select media appropriate for unstructured activities.

F. Provide media which allows each child to experience success.

G. Provide a variety of materials appropriate to the age level of the children---younger children would be exposed to fewer, basic materials.

H. Select quality materials and equipment. This aids in promoting pleasant, successful experiences.

III. Sample Listing of Materials and Equipment:

A. Good quality crayons, large and unwrapped.

B. Colored chalk.

C. Felt-tip pens (multi-colored).

D. Paste.

E. Scissors (both left and right handed, blunt ended) and a scissors' rack.

F. Glue (clear drying).

G. Paper (basic to every art center).

1. Newsprint (unprinted newspaper in large sheets with stub ends from newspaper office.

2. Manilla paper (heavier than newsprint) which is good for crayons, chalk, felt-tip pens, and some pasting.

3. Finger painting paper (shelf paper can be substituted which is less expensive).

4. Heavy white paper (provide on occasion for painting and to increase visual awareness).

5. Butcher paper (for murals, large collages, etc).

6. Newspaper (provide on occasion for easel painting)--- it has a pretty effect and is useful for clean up.

7. Construction paper (multi-colored).

8. Miscellaneous paper (wall paper, books, holiday wrapping paper, printer remnants, etc.). Use architect paper which is often used on only one side.

H. Paints.

1. Poster or tempra paint (powdered or prepared), using soap to extend.

2. Finger paints (commercial or classroom made).

I. Brushes.

1. Easel brushes (large or full).

2. Paste brushes.

J. Tapes.

1. Masking.

2. Cellophane (plastic).

3. Dispenser.

K. Clay.

L. Playdough.

M. Bowls for paints and clay.

N. Sponges.

O. Trays (small) for finger painting and the organization of self-selected art activities.

P. Linear three-dimensional materials (these are good to have on hand for collages and other construction art activities).

1. String, thread, yarn, wire.

2. Rick-rack, sewing tape, bias tapes.

3. Thin rubber tubing.

4. Basket reed.

5. Colored sticks, tooth picks, thin dowels.

6. Pipe cleaners.

7. Q-Tips, spools, tongue depressors.

8. Cotton balls, sponges.

9. Spaghetti (all noodle products).

10. Fabric scraps.

11. Paper sacks, scrap paper.

12. Salt, sand, sawdust, coffee grounds, soapflakes.

Q. Stapler and staples.

R. Hole punch.

S. Smocks.

T. Chalk board.

U. Easels.

V. Portable tub (if sink is not available).

CHAPTER V

THE BLOCK CENTER

RATIONALE

A building center for young children provides a place for developing human relationships while promoting manipulative skills. Creativity is encouraged; opportunities for dramatic play, social living and cooperation are there when the center is well equipped and wisely supervised. This area provides the children with a foundation for reasoning, mathematics, problem solving, basic engineering and architecture. Mastery over blocks and the feeling of power it gives also helps to foster the children's self-esteem.

ESSENTIAL CONTENT INFORMATION

I. Physical Arrangement of the Block Center:

A. Locate away from traffic patterns.

B. Locate away from quiet interest centers.

C. Plan adequate floor space---

1. Thirty five square feet per child is recommended footage.

2. Ideally, the block center should be large enough for eight children to build roads, rivers, bridges, etc.

3. A space of 280 square feet (24' x 20') is appropriate for a group of eight children.

4. If your space is less than 175 square feet (12' x 15'), the block center should be limited to five children.

D. Place a rug or carpet on the floor.

E. Provide appropriate storage facilities.

1. Storage facilities for children should be placed low. This promotes independence and encourages a smooth-running preschool.

2. A block bin on wheels can be provided for supplemental block storage.

3. Shelves should be located near the building area.

F. Allow children sufficient time to enjoy their block creations.

II. Selection of Materials and Equipment:

A. All blocks should be designed to fit together mathematically, each size twice as long or wide as the preceding size.

B. Blocks should be sanded smooth and free from splinters.

C. Blocks should be waxed or shellacked rather than painted.

D. There must be an adequate supply of blocks and accessory equipment to stimulate and sustain activity.

E. Provide an adequate variety of types of blocks to stimulate thinking and creativity.

III. Sample Listing of Materials and Equipment:

A. Hollow wooden blocks of sturdy hardwood made in multiples of each other so that they fit together accurately. Recommended numbers and sizes:

1. 36 hollow blocks 12" x 12" x 6".

2. 12 hollow blocks 24" x 12" x 6".

3. 12 half units 12" x 6" x 6".

4. Auxiliary boards and ramps.

B. Set of 500 building blocks ("unit blocks") of solid hardwood in carefully-engineered multiples. When too few blocks are provided, children are not challenged and may not explore in depth the block activities that exist.

C. Set of 60 hollow cardboard blocks. These are much more economical than wooden blocks. They are shoe box size and reinforced with an inside filler which makes them quite strong.

D. Table blocks of an assortment of one-inch cubes, parqueting blocks.

E. Basic accessories:

1. Transportation toys---Cars, trucks, fire engines, boats, planes, trains (if space allows).

2. Miniature people and animals made of rubber, plastic, wood or cardboard. (Note: Accessory toys should be rotated so that a limited number are available at one time in order to provide more meaningful experience to the children.)

3. Boards and ramps.

F. Additional accessories:

A number of additional accessories can be divided by the innovative teacher. These, too, should be rotated.

1. Samples of linoleum squares, tile, or rug.

2. Shells for "plates" or decoration.

3. Pegs, small sticks and stones as "cargo" on boats and trucks.

4. A variety of small containers.

5. Lumber scraps.

6. Popscicle sticks for signs and fences which will stand up with plastic-type base.

7. Rubber tubing which can be tacked to a cylinder block to make a simple gas pump.

8. Excelsior---hay for farm animals.

9. Signs, printed by the teacher on sturdy tag board at children's request. These can be saved.

CHAPTER VI

THE DRAMATIC PLAY CENTER

RATIONALE

A dramatic play center that is planned and implemented by a knowledgeable teacher can be an important element in promoting children's development. Because children learn best when actively involved with their environment, dramatic play is a very natural medium for learning. As they play, strategies are developed for solving problems and for developing more complex play episodes. Experience is gained in social interaction. Children are helped to advance from their ego-centric positions as they play many roles. Language, communication skills and creative ability are all enhanced. The emotional needs of the children are met as conflict situations can be safely dealt with and they have the freedom to assume any roles that they wish to play which provides both ego-gratification and role-exploration.

ESSENTIAL CONTENT INFORMATION

I. Physical Arrangement of the Dramatic Play Center:

A. Locate away from the activities which require the greatest degree of quietness and privacy.

B. Provide adequate space to accommodate enough child-sized furniture to make the play realistic and allow children freedom of movement. (approximately 35 sq. ft. minimum)

C. Locate near a water source if possible.

D. Provide appropriate and adequate storage space for the varied materials in the center: pegboard for housekeeping materials such as a broom and dustpan, etc.; a clothesrack or closet for clothes; storage shelves for pots and pans; etc.

E. Placing the dramatic play area and block area together may compliment both areas.

II. Selection of Materials and Equipment:

A. Provide dolls that are unbreakable and washable.

B. Select equipment that is scaled to size for preschool children.

C. Provide materials to stimulate spontaneous role playing of familiar persons.

D. Introduce children to materials to stimulate new roles for dramatic play.

E. Be alert to the many items which can be obtained free of charge which make excellent props.

F. Select equipment that is well constructed and durable.

G. Rotate some of the materials in this center regularly. However, some materials such as housekeeping furniture would probably always be present.

III. Sample Listing of Materials and Equipment:

A. Full length mirror.

B. Puppets.

C. Various blocks.

D. Tape recorder and cassettes.

E. Telephones (real ones if possible).

F. Equipment and materials related to family living and housekeeping:

1. Boy and girl dolls of different races.

2. Child-sized appliances including a sink, stove, and refrigerator.

3. Small table and chairs.

4. Rocking chair.

5. Doll furniture.

6. Dishes and cooking utensils.

7. Dress up clothes for both sexes including shoes, gloves, hats, purses, ties, etc.

8. Iron and ironing board.

G. Typewriter.

H. Dramatic play kits.

Items that go together to suggest a particular type of activity can be placed in a sturdy box ready for use:

1. Items in a beauty parlor---Plastic brushes, combs, cotton balls, powder, scarves, unbreakable mirror.

2. Supermarket---Cash register, play money, paper pads and pencils, paper sacks, empty food containers, wax fruit.

3. Post office---Large index cards, stamp pads, crayons, stamps, (i.e., Christmas seals), shoe box with slot cut in front.

4. Doctor's office---Tongue depressor, old stethescope, satchel, bandaids, cotton balls, nurses cap, discarded hypo syringes without needles (should be boiled), uniform.

5. These represent only a sample of the themes which could be used for kits. Others include: restaurant equipment, service station items, fireman needs, plumber tools, farmer tools, mail carrier needs and business office supplies, etc.

CHAPTER VII

THE LANGUAGE ARTS CENTER

RATIONALE

Skill in the use of language is a crucial factor in the competence of an individual. This includes the ability to listen, speak, read, and write. Varied materials and teaching techniques are used in the language arts program in the preschool to promote the child's language ability.

Development in language is interrelated with all other aspects of development. Language and communication skills facilitate social development. Intellectual development and language development are very closely related; as children acquire language they use verbal symbols to represent mental images. Children's language development is obviously related to their physical development as any physcological problems will be a deterrant to language. Language enables children to verbally express both good and bad feelings, but most importantly, good language skills help children to feel good about themselves.

ESSENTIAL CONTENT INFORMATION

I. Physical Arrangement of the Language Arts Center:

A. Locate this center near other quiet centers and away from traffic lanes.

B. Provide adequate lighting for looking books.

C. Provide a low-standing display shelf so that books are at children's eye level. Position books so that their covers show.

D. Carpet or provide a rug for this area.

E. Provide inviting areas for children to sit and look at books in privacy such as a rocking chair, cushions, or old bath tub with cushions.

F. Provide a table and chairs scaled to size for children for language arts activities.

G. Place objects for children to view at their eye level.

H. Use screens dividers and bookcases to cut down distractions in this center.

II. Selection of Materials and Equipment:

A. Select books appropriate to the age level of the children.

B. Change the book display regularly.

C. Provide materials that provide variety in literature and story-telling, such as puppets, flannel board, stories, tape recorder, etc.

D. Provide several books on a low shelf from which children may select.

E. Provide other items which make this area inviting such as an attractive bulletin board, stuffed animals or dolls.

F. Provide materials for developing listening skills.

G. Provide a viewing center for common experiences and vocabulary enrichment.

III. Sample Listing of Materials and Equipment:

A. Flannel board and figures.

B. Record player and earphones.

C. Records.

D. Tape recorder.

E. Recorded cassettes and blank cassettes.

F. Individual filmstrip viewers.

G. Filmstrips.

H. Puppets.

I. Large crayons and pencils.

J. Paper.

K. Books of various types:

1. Poetry.

2. Information.

3. Nature.

4. Holidays.

5. Folk stories.

6. Emotions.

7. Everyday experiences.

L. Assorted props to introduce specific stories.

M. Language master.

N. Overhead projector and transparencies.

O. Slide projector and slides.

P. Pictures and photographs.

CHAPTER VIII

THE MATHEMATICS CENTER

RATIONALE

The mathematics center in the preschool classroom should be planned and arranged in a way that invites exploration of concrete materials appropriate to children's levels of maturation and development. This center must encourage them to solve problems, establish connections between ideas and gain confidence in their ability to deal with the mathematical aspects of life.

Mastery of developmentally-appropriate skills in this area of development seems necessary in order for the children to later develop the ability to think abstractly.

ESSENTIAL CONTENT INFORMATION

I. Physical Arrangement of the Mathematics Center:

A. Locate the center so there is no traffic through it.

B. Locate the center so that it is near other quiet activities, but with allowance for noisy periods.

C. Provide a hard-surfaced work table for activities.

D. Provide low storage shelves which provide children easy access to appropriate materials.

E. Arrange space for the child to work privately or with others.

F. Carpet this area; many math activities lend themselves to being worked on the floor.

II. Selection of Materials and Equipment:

A. Provide varied materials which are all geared to assist the child in the mastery of one math concept.

B. Provide real objects and materials for the child's exploration and manipulation.

C. Select materials for each child appropriate to that child's individual level of development.

D. Certain math materials such as graded cylinder blocks are self-correcting. A selection of this type of material should be considered.

E. Symbolic math materials (i.e., pictures, stories) should be carefully selected to correspond to concepts being developed through concrete materials.

F. Select materials developmentally-appropriate to the age level of the group.

III. Sample Listing of Materials and Equipment:

A. Abacus.

B. Beads of assorted sizes, shapes, colors, and bead patterns.

C. Lotto games.

D. Attribute blocks.

E. Yard stick, ruler, tape measure.

F. Scale.

G. Counting frame.

H. Assorted shapes of varied materials: felt, sandpaper, wood, etc.

I. Cuisenaire rods.

J. Flannel board.

K. Flannel or felt cutouts of shapes, numerals and other objects familiar to the children.

L. Pegboard and pegs.

M. Parquetry blocks.

N. Jumbo color dominoes.

O. Calendar.

P. Thermometers---both weather and cooking.

Q. Nesting blocks.

R. Puzzles.

S. Books dealing with mathematical concepts.

T. Toy money in coins and paper dollars.

U. Magnetic board.

V. Assorted containers for liquid and dry measure: $\frac{1}{2}$ cup, cup, pint, quart.

W. Solid geometric shapes.

X. Many excellent teaching games for mathematics can also be easily made.

CHAPTER IX

THE MUSIC CENTER

RATIONALE

The music center is one area of the preschool where children can go to experiment with musical sounds and instruments, movement, and singing. In this center the children's emotional expression and creativity are the areas of development which are emphasized. The music center may be used for both self-selected activity and total group creative activities.

ESSENTIAL CONTENT INFORMATION

I. Physical Arrangement of the Music Center:

A. Locate the center so there is no traffic through it.

B. Have a permanent space in the room, if possible, for storage of materials and more structured music activities.

C. Provide low storage shelves that make materials readily available to children.

D. Plan a storage system for materials such as a pegboard, labeled shelves, ice cream cartons, or storage boxes.

E. Provide a hard-surfaced floor for creative movement.

F. Provide a carpeted area for musical activities which seem adapted to a sitting position.

II. Selection of Materials and Equipment:

A. Select records appropriate to the preschool child; this would include classical music and jazz as well as children's records.

B. Vary the selection to include both instrumental and vocal records.

C. Select a record player with a clear tone and sufficient volume for group use.

D. Listen to an entire record before choosing it for your class.

E. Select instruments which the preschool child can "play"; a trumpet for example would be too difficult for the child.

F. Provide a balance of new songs and old songs that the children know and like.

G. Select songs which contain themes that are familiar to the children.

H. Incorporate many action songs in the curriculum which encourage children's active participation.

III. Sample Listing of Materials and Equipment:

A. Record player.

B. Autoharp.

C. Melody bells.

D. Tape recorder and cassettes.

E. Xylophone.

F. Songbells.

G. Harmonica.

H. Guitar.

I. Pitch pipe.

J. Rhythm instruments:

1. 8 pairs of rhythm sticks.

2. 2 pairs of maracas.

3. 3 bells.

4. 3 jingle sticks.

5. 2 tambourines.

6. 1 castanet

7. 1 pair of cymbals.

8. 2 pairs of finger cymbals.

9. 1 triangle.

10. 1 drum.

11. 1 tone block.

Note: This is the recommended number of instruments for twenty-five children.

CHAPTER X

THE SCIENCE CENTER

RATIONALE

Although various areas of children's development are fostered in the science center, the primary developmental goal of this center is intellectual development. A well-planned science center helps develop children's problem solving ability as curiosity stimulates them to observe, explore and seek answers to questions. Children develop concepts about the biological aspects of the world through the acquisition of scientific knowledge. Research indicates that learning processes are enhanced through children's active interaction with their environments; thus, in a good science center, the foundations are being laid for later development of higher cognitive processes.

ESSENTIAL CONTENT INFORMATION

I. Physical Arrangement of the Science Center:

A. Locate near a water source.

B. Locate near windows for natural light.

C. Provide low storage shelves with easy access for children.

D. Provide an artificial light source.

E. Place so that traffic is routed around the center.

F. Locate near quiet activities to facilitate children's concentration.

G. Provide a heating unit for experiments.

H. Locate near an electrical outlet.

I. Provide ample room for children to move about and be creative.

II. Selection of Materials and Equipment:

A. Provide a wide variety of challenging and attractive materials that challenge children's thinking, observing and generalizing.

B. Use materials which are safe for children to use.

C. Provide materials sized in proportion to the child's motor development.

D. Provide items appropriate to children's level of development.

E. Provide children with experiences with real objects that they can handle and use for experimenting.

III. Sample Listing of Materials and Equipment:

A. Magnifying glass.

B. Assorted magnets.

C. Aquarium.

D. Assorted plants.

E. Assorted rocks.

F. Compass.

G. Prism.

H. Assorted seeds.

I. Assorted shells.

J. Testing bottles.

K. Smelling bottles.

L. Sound cans.

M. Globe.

N. Live animal(s).

O. Lever.

P. Balance scale.

Q. Balance scale.

R. Flashlight.

S. Homes of various creatures (nests, cocoons, shells, etc.).

T. Ant farm.

U. Bunsen burner and pyrex containers for experiments.

V. Tongs and large tweezers.

W. Battery and cells.

X. Eye droppers.

Y. Containers for liquid.

Z. Bird feeder.

CHAPTER XI

SUPPLEMENTAL MATERIALS

LEARNING CENTERS

SUPPLEMENTAL MATERIALS

BOOKS

1. Bereiter, C. and S. Engelmann.
   Teaching Disadvantaged Children in the Preschool.
   Englewood Cliffs, New Jersey: Prentice-Hall, 1966.

2. Cherry, Claire.
   Nursery School Management Guide.
   Belmont, California: Fearon Publishers, 1973.

3. Evans, E. B., et al.
   Day Care: How to Plan, Develop and Operate a Day Care Center.
   Boston: Beacon Press, 1971.

4. Fallon, Berlie J.
   Forty Innovative Programs in Early Childhood Education.
   Belmont, California: Fearon Publishers, 1973.

5. Fantini, N. D. and G. Weinstein.
   The Disadvantaged: Challenge to Education.
   New York: Harper and Row, 1968.

6. Hess, Robert D. and Doreen Croft.
   Teachers of Young Children.
   Boston: Houghton Mifflin Company, 1972.

7. Hildebrand, Verna.
   Introduction to Early Childhood Education.
   New York: Macmillan Publishing Company, 1971.

8. Keister, Mary Elizabeth.
   The "Good Life" for Infants and Toddlers.
   Washington, D. C: National Association for the Education of Young Children, 1970.

9. Leeper, Sarah, et al.
Good Schools for Young Children.
New York: Macmillan Publishing Company, 1974.

10. Maccoby, E. and M. Zellner.
Experiments in Primary Education.
New York: Harcourt, Brace, Jovanovich, 1970.

11. Mack, Jeanne.
Early Childhood Development and Education.
Albany, New York: Delmar Publishers, 1975.

12. McFadden, Dennis N., ed.
Early Childhood Development Programs and Services: Planning for Action.
Washington, D. C: National Association for the Education of Young Children, 1970.

13. Mills, Belin Collantes and R. A. Mills.
Designing Instructional Strategies for Young Children.
Dubuque, Iowa: William C. Brown Company, 1972.

14. Moore, Shirley G. and Sally Kilmer.
Contemporary Preschool Education: A Program for Young Children.
New York: John Wiley, 1973.

15. Nimnicht, Glenn, et al.
The New Nursery School.
New York: General Learning Corporation, 1969.

16. Nixon, Ruth H. and Clifford L. Nixon.
Introduction to Early Childhood Education.
New York: Random House, 1971.

17. Parker, Ronald K., ed.
The Preschool in Action: Exploring Early Childhood Programs.
Boston: Allyn and Bacon, 1972.

18. Pitcher, Evelyn G., et al.
Helping Young Children Learn.
Columbus, Ohio: Charles E. Merrill Company, 1966.

19. Read, Katherine.
The Nursery School.
New York: W. B. Saunders, 1966.

20. Shulman, Anne S.
Absorbed in Living, Children Learn.
Washington, D. C: National Association for the Education of Young Children, 1967.

21. Spodek, Bernard.
Early Childhood Education.
Englewood Cliffs, New Jersey: Prentice-Hall, 1973.

22. Spodek, Bernard.
Early Childhood Education.
Englewood Cliffs, New Jersey: Prentice-Hall, 1972.

23. Sunderline, Sylvia, ed.
Toward Better Kindergartens.
Washington, D. C: Association for Childhood Education International, 1967.

24. Tarney, Elizabeth D.
What Does the Nursery School Teacher Teach?
Washington, D. C: National Association for the Education of Young Children, 1965.

25. Taylor, Barbara J.
A Child Goes Forth.
Provo, Utah: Brigham Young University Press, 1970.

26. Todd, Vivian E. and Georgenne Hunter.
The Aide in Early Childhood Education.
New York: Macmillan Publishing Company, 1973.

27. Todd, Vivian and Helen Hefferman.
The Years Before School: Guiding Preschool Children.
New York: Macmillan Publishing Company, 1964.

28. Vance, Barbara.
Teaching the Pre-Kindergarten Child: Instructional Design and Curriculum.
Monterrey, California: Brooks/Cole Publishing Company, 1973.

29. Wadsworth, B. J.
Piaget's Theory of Cognitive Development.
New York: David McKay Company, 1971.

PAMPHLETS: MAJOR SOURCES

American Association of Elem-K-Nursery Educators
1201 16th Street N. W.
Washington, D. C. 20036

1. Day Care: Planning and Implementing.
   Yawkey, Thomas and Carol Sufeldt.
   $2.00

American Institute for Research
Perceptual Development Center Program
U. S. Government Printing Office
Washington, D. C. 20402

2. Model Programs: Childhood Education.
   $ .20

Association for Childhood Education International
3615 Wisconsin Avenue N. W.
Washington, D. C. 20016

3. Equipment and Supplies.

4. Housing for Early Childhood Education--Centers for Growing and Learning.

5. Involvement Bulletin Boards.

6. Learning Centers--Children on Their Own.

7. Play: Children's Business.

8. Playgrounds for City Children.

9. Playscapes.

Child Development and Retardation Center
University of Washington
Seattle, Washington 98195

10. Criteria for Selection of Equipment and Material for use in Head Start.
Hayden, Alice.
Free.

Child Welfare League of America, Inc.
67 Irving Place
New York, New York 10003

11. Guide for Establishing and Operating Day Care Centers for Young Children.
Boguslawvski, D. B.

Day Care and Child Development Council of America
1012 14th Street N. W.
Washington, D. C. 20005

12. Patterns for Designing Children's Centers.
Osmon, Fred L.
$2.95

13. Program Planning Aids for Day Care Centers.
Louisiana Department of Public Welfare.
$2.00

Day Care Consultation Services
Bank Street College of Education
610 West 112th Street
New York, New York 10025

14. Hustling Resources for Day Care.
Levine, James A.

Delta-Schoolcraft Intermediate School District
810 North Lincoln Road
Escanaba, Michigan 49829

15. A Model Delivery System for Educational Programming of Preschool Children.

National Association for the Education of Young Children
1834 Connecticut Avenue N. W.
Washington, D. C. 20036

16. Challenge Ahead for Early Childhood Education.
Biber, Barbara.
$1.35

17. The Cognitively Oriented Curriculum: A Framework for Preschool Children.
Weikart, David P., et al.
$3.50

18. Curriculum is What Happens: Planning is the Key.
Dittmon, Laura.
$1.75

19. The Idea Box.
(A series of 5 booklets)
$5.75

20. Montessori in Perspective.
Perryman, Lucille, ed.
$2.00

21. Open Education: The Legacy of the Progressive Movement.
Engstrom, Georgianna, ed.
$2.50

22. Planning Environments for Young Children: Physical Space.
Kritchevsky, et al.
$1.50

23. Play: The Child Strives Toward Self-Realization.
Engstrom, Georgianna, ed.
$2.50

24. Play and Playgrounds.
Stone, Jeanne Galambos.
$3.25

25. The Politics of Day Care.
Prescott, E., et al.

26. Promoting Cognitive Growth: A Developmental-Interaction Point of View.
Biber, Barbara, et al.
$2.50

27. What Does the Nursery School Teacher Teach?
Tarney, Elizabeth D.
$1.00

The National Elementary Principal
1801 North Moore Street
Arlington, Virginia 22209

28. Open Framework: Evolution of Concept in Preschool Education.
Weikart, David.
$2.00

AUDIO-VISUAL RESOURCES

FILMS

ABC Media Concepts
American Broadcasting Company
1330 Avenue of the Americas
New York, New York 10019

1. Precious Years.
   Color, 25 minutes.
   Documentary takes view of the Erikson Institute for Early Education to examine the curriculum and to show how its teachings are put into practice in the Evanston Child Care Center, the Brown Center in Chicago and the Martin Luther King Family Center.

Anti-Defamation League
315 Lexington Avenue
New York, New York 10016

2. The Task: Theory, Structure and Application. Rental: $15.00
   B/W, 30 minutes.
   An outline of the Bereiter-Engelmann Cycle of Action of "the task," from the signal for attention through reinforcement for performance. Discussion guide available.

3. This is the Way We Go to School.
Color, 28 minutes.
A visual record of the Weikart Study. Four approaches to working with four-year-olds, and the results of the comparative study conducted to evaluate the methods.

Caroline Zachary Institute of Human Development
New York University
26 Washington Place
New York, New York 10003

4. Understanding Children's Play. Rental: $7.00
B/W, 11 minutes.
This film presents a good view of the nursery setting, materials and equipment which is valuable in dealing with the room as a functional entity in learning.

Carousel Films
1501 Broadway
New York, New York 10000

5. Learning and Behavior: The Teaching Machine. Price: $135.00
B/W, 26 minutes.
The work of various behaviorists is presented. A useful film for those who have little experience with an experimental framework as a reference point in curriculum development.

Columbia Forum Productions
10621 Fable Row
Drawer EC
Columbia, Maryland 21004

6. The Joy of Learning. Rental: $25.00
Color, 28 minutes.
An overview of a Montessori program in Washington, D. C. presents the rationale for Montessori educational facilities, application of these and preparation of the environment to make such an education possible.

EDC Film Library
Educational Development Center
55 Chapel Street
Newton, Massachusetts 02160

7. Infant School.
B/W, 32 minutes.
A British infant school that has developed an open curriculum is depicted.

IDEA
P. O. Box 628
Far Hills Branch
Dayton, Ohio 45419

8. Primary Education in Great Britain.
Color, 17 minutes.
Family grouping within a British school. Several interesting curriculum ideas; use of indoor and outdoor space is thought-provoking.

Modern Talking Picture Service
16 Spear Street
San Francisco, California 94105

9. New Nursery School Series. Free on loan.
This series describes the Responsive Environment Nursery School at Colorado State University, designed by Dr. Glen Nimnicht. This intervention program is designed to aid poor children in their development to improve language, problem-solving techniques, self-concept, interpersonal relationships and self-control.

A. Learning Booths.
Color, 17 minutes.
MTP #9277

B. Intellectual Development.
Color, 18 minutes.
MTP #9276

Newenhouse/Nova
1825 Willow Road
Northfield, Illinois 60093

10. Learning to Learn. Rental: $13.50
B/W, 14 minutes.
A view of $2\frac{1}{2}$- to $5\frac{1}{2}$-year-olds, ethnically and socially mixed children working in a Montessori-type environment. Programming of activities along Piagetian lines within a Montessori framework.

New York University Film Library
26 Washington Place
New York, New York 10003

11. Organizing Free Play. Rental: $7.00
B/W, 22 minutes.
A nursery school plan for free play. A useful film for discussion and training purposes.

12. What Does it Need to Grow? Rental: $20.00
Color, 29 minutes.
Three varied approaches: problem solving, logical thinking, and play in the preschool programs.

Ohio State University Film Library
Columbus, Ohio 43200

13. School for Fours.
B/W, 27 minutes.
Training film made for student teachers. Children are learning to accept limits, to explore and to experiment. Cooperative teaching and student teachers undertaking lessons are seen.

Polymorph Films
331 Newbury Street
Boston, Massachusetts 02115

14. Day Care Today. Rental: $30.00
Color, 25 minutes.
Provides a view of three functioning day care centers: a community center that accepts infants and is open a full working day; a factory-operated center for employees; and a university-related teacher-training center.

FILMSTRIPS

Bank Street Films
267 West 25th Street
New York, New York 10003

1. School Beginnings: The First Day. Rental: $12.00
Color, 18 minutes.
Mechanics for planning first day of a preschool program. A good guide to planning. Focus is on three children and how the teacher approaches each. A guide comes with the filmstrip.

2. School Beginnings: The First Week. Rental: $12.00
Color, 24 minutes.
A teacher describes her preschool program: schedule, materials selected and transitions from one activity to the next. A guide comes with the filmstrip.

EPIE Institute
463 W. Street
New York, New York 10014

3. The Early Childhood Information Unit. Price: $88.50/set
Set of twelve filmstrips and audio cassettes.
Gives a comparative view of fifteen early childhood programs, including the Appalachia preschool program, East Harlem Block School and Bank Street Model.

CASSETTE TAPES

Child Care Information Center
532 Settlers Landing Road
P. O. Box 548
Hampton, Virginia 23669

1. The Child and the Balance. $2.50
   Holland, Sanny Sue.
   95-10
   Some workable solutions are given to the problems confronting quality child development programs in commercial day care centers.

2. Head Start: New Directions. $2.50
   Robinson, James.
   90-81
   Some of the new objectives and goals for Head Start and the hoped-for long-range benefits are discussed.

3. Innovations in Early Childhood Programs. $2.50
   Meier, John.
   90-17
   What are some innovations in childhood programs today? What are some ideas and programs not yet in use, and how can you best adapt these to your uses?

4. Interest, Involvement and Motivation. $2.50
   Swayze, Marion.
   90-02
   Concerns training teachers in using techniques for arousing interest and motivation in children and demonstrates an intervention program for low-involved preschool and day care children.

5. Piaget Workshop $2.50
Elkind, David.
90-69

A workshop focusing on the Piaget Theory of education, suggesting some approaches to teaching.

6. Preschool Education in Japan.
Yamashita, Toshio.
90-65

There are two types of preschool education in Japan--kindergarten and day nurseries. This presentation discusses programs and methods of these.

7. Quality Programs for Low-Budget Centers. $2.50
Parks, Carolyn.
90-31

Discussion of practical ideas for curriculum, budgeting and parent involvement.

8. A Review and Critique of Day Care and Early Childhood Curricula. $2.50
Parker, Ronald.
90-71

The objectives of day care are discussed, as well as the different types of available programs. Instructional organizations are reviewed with reference to their theories of operation and curriculum.

9. Setting Up the Classroom as a Learning Environment. $2.50
Davis, David C.
90-19

Innovative ideas on how the classroom can be altered into a really productive environment for learning and creativity.

10. What is Good for Young Children? $2.50
Katz, Dr. Lilian
95-12
Discussion and recommendations in regard to the following: setting goals and problems of teaching.

11. What it Takes to Implement a Model Curriculum; Implications for Teachers; What has been Found in Planned Variation Models. $2.50
Klein, Jenny.
90-23
Discusses the problems and details involved in implementing a model curriculum, the meanings and implications to teachers. Follow-up results.

12. Why Programs for Young Children? $2.50
Elkind, David.
90-42
Discussion of evidence, pro and con, for programs for young children.